



FINAL REPORT



2007 ANNUAL DIRECT OBSERVATION SURVEY OF SAFETY BELT USE

Prepared for:
Office of Highway Safety Planning
4000 Collins Road
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Prepared by:
Wayne State University
Transportation Research Group
Detroit, MI

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The opinions, findings, and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Michigan Office of Highway Safety and Planning, the U.S. Department of Transportation, or the National Highway Transportation Safety Administration. This report was prepared in cooperation with the Michigan Office of Highway Safety Planning and the U.S. Department of Transportation, and the National Highway Traffic Safety Administration.

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16. Abstract This study reports the results of the 2007 Annual Direct Observation survey of safety belt use. One hundred ninety-two (192) intersection/interchange sites were observed near Labor Day weekend. All drivers and front-seat passengers were observed for safety belt use and categorized by vehicle type, vehicle use, gender, age and race. The results of this survey show that the safety belt usage rate in the State of Michigan is 93.7 percent. Males and pick-up truck drivers continue to trail in the use of safety belts and should be targeted in future programs.			
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1.0 INTRODUCTION

Increasing the use of safety restraint systems, while driving or traveling as a passenger in an automobile, is one of the most effective and cost-effective ways of reducing injuries and fatalities on the nation's highways. Efforts have been made to increase the use of safety belts over three decades, yet according to the 2006 nationwide safety belt surveys, approximately 19 percent of the drivers and front-seat passengers do not buckle up while driving or riding as a front-seat passenger in an automobile in 2006 [1]. In Michigan, past statewide safety belt use studies indicate that the overall use by drivers and front-seat passengers has been increasing consistently over the past six years. The past seven years' experience is as follows:

2000	-	83.5%
2001	-	82.3%
2002	-	82.9%
2003	-	84.8%
2004	-	90.5%
2005	-	92.9%
2006	-	94.3%

The above data indicates that the safety belt use rate in Michigan is far ahead of the national average and is one of eleven states and territories with reported safety belt use rates greater than 90 percent [1]. It is important to recognize that Michigan is a "primary law" state, which means a motorist can be stopped and cited for the sole reason of not wearing a safety belt while driving or riding as a front-seat passenger. In "secondary law" states, motorists must be stopped for another traffic-related offense in order to be ticketed for not wearing a safety belt. The "primary law" states averaged a safety belt use rate of 85.6 percent as compared to the "secondary law" states, which only averaged 77.8 percent in 2006 [2].

The use of safety belts is the single most effective means of reducing fatal and non-fatal injuries in vehicular crashes. The reduction in the severity of injuries has proven to be linked to the use of safety belts by many studies in the past. In 2005, 31,415 passenger vehicle occupants were killed in traffic crashes in the USA, of which, the safety belt use rate was known for 29,186 occupant fatalities. For these fatalities where safety belt use was known, approximately

55 percent of the occupants were not utilizing their safety belts [3]. The National Highway Traffic Safety Administration (NHTSA) estimates that an 80 percent safety belt use rate can save more than 15,000 lives per year and an overall societal cost of 50 billion dollars in the country each year [4]. The NHTSA established that 195,382 lives have been saved between 1975 and 2004 due to the use of safety belts [5].

Currently, airbag systems are a part of standard equipment in all vehicles. Vehicles equipped with airbags need the occupants to be restrained by safety belts in order to be effective in saving lives and reducing injuries in the event of a severe crash. Safety belts protect vehicle occupants in the following ways:

- Reduces the chance of being in contact with the interior of the vehicle,
- Prevents the occupants from ejection, and
- Prevents occupants from being too close to the deployed airbags, thus avoiding severe injuries from the airbags, ejection from the vehicle and vehicle interior contacts.

Past research indicates that the use of safety belts reduces the risk of fatal injury for the driver and front seat passengers by approximately 45 percent for passenger vehicles and 60 percent for light trucks. Moreover, the use of safety belts reduces the risk of moderate to critical injury by 50 percent for occupants of passenger vehicles and 65 percent for the occupants of light trucks [5]. Therefore, a small increase in safety belt use often results in a large overall savings to society.

The non-use of safety belts is a behavioral issue, so programs targeted to change driver behavior related to the use of safety belts often leaves a long lasting impact on the affected drivers and thus, continues to increase the safety belt use rate in the driving population. Various safety belt use improvement programs are often targeted to specific areas within a state. Knowing the areas within a state that have lower safety belt use rates may assist the program coordinators in the Office of Highway Safety Planning (OHSP) to allocate enforcement funding to specific areas, which may result in higher rates of safety belt use. There are, of course, statewide initiatives, which are expected to impact the entire state. The safety belt use data can be used for the following:

- To fulfill reporting requirements to NHTSA.
- To allocate statewide safety funding to specific program areas.
- To provide targeted funding to specific areas within the state where use rates are lower than the statewide average.
- To provide targeted programs for certain segments of the population.

1.1 Study Purpose and Objectives

The purpose of this study was to perform an annual observational survey for 192 intersections/interchanges to determine the percentage of drivers and front-seat passengers utilizing their safety belts.

The specific objectives of this study were as follows:

- Finalize the methodology for collecting data for a representative sample of sites throughout the State, which ensured reliable statewide statistics, in an economically feasible manner.
- Provide training to all staff conducting the observation surveys and conduct Quality Assurance/Quality Control (QA/QC) of the data collection efforts.
- Conduct the annual observational surveys of safety belt use around and during the Labor Day holiday.
- Summarize and cross-tabulate the observational data in a spreadsheet format indicating overall safety belt use, safety belt use by stratum, safety belt use by time of day and day of week, and safety belt use by demographic characteristics.
- Continue to track the changes in safety belt use. Generate necessary comparative data and statistical analyses to assess the relevancy of the 2007 annual observational data and results to previous observational results.

1.2 Study Area

The study area for the statewide observational survey included the counties that represented at least 85 percent of the population in the State of Michigan.

2.0 METHODOLOGY

In order to develop targeted public awareness programs to increase safety belt use, one must know the distribution of safety belt use rates in various parts of the state and among various demographic groups, in addition to knowing the overall safety belt use rate in the state. It is, however, important to capture the statewide use rate following the sampling strategy and data collection procedure recommended by NHTSA. WSU-TRG performed such observational surveys in the state as a part of this project.

The site selection methodology for this study followed the procedure used in the Direct Observation of Safety Belt Use in Michigan surveys for the years 2000 to 2006. The uniform criteria, as presented in the Federal Register and the National Highway Traffic Safety Administration documents, were also examined carefully to ensure adherence to the nationwide standard. The methodology for annual observation direct survey is the same as used in the 2005 and 2006 evaluation, which followed NHTSA's guidelines, resulting in the selection of areas in the state to encompass 85 percent of the population. The methodology used including location selection that was completed in the 2005 evaluation of the annual observation direct survey is described in the following paragraphs.

NHTSA requires that the areas surveyed throughout the state encompass 85 percent of the population. The areas selected for the observation survey included 32 counties in the State of Michigan that represented 86.86 percent of the state's population, based upon 2004 U.S. Bureau of Census Data estimates as shown in Table 1. This sample of counties selected for the evaluation study fulfills NHTSA's requirements. The geographic locations of the counties included in the evaluation study are depicted in Figure 1.

A system for partitioning the candidate counties into various strata, based on the 2004 vehicle miles traveled (VMT), was developed in the 2005 May *Click It or Ticket* Evaluation and is shown in Table 2. The number of observation sites for each stratum is also shown in Table 2. Forty-eight (48) sites were observed for Stratum 1, 50 sites for Stratum 2, 53 sites for Stratum 3, and 41 sites for Stratum 4. By using the same 192 sites as previously used, there is a more precise estimate of safety belt use. A complete listing of the 192 sites is provided in Appendix I.

Table 1. Population Data for the Selected Counties in Michigan
[Source: U.S. Census Bureau 2004 Estimates]

Name of County	Population	Percent Population	Cumulative Percent Population Statewide for Michigan	County Ranking by Population
Wayne	2,016,202	19.94%	19.94%	1
Oakland	1,213,339	12.00%	31.94%	2
Macomb	822,660	8.13%	40.07%	3
Kent	593,898	5.87%	45.94%	4
Genesee	443,947	4.39%	50.33%	5
Washtenaw	339,191	3.35%	53.69%	6
Ingham	280,073	2.77%	56.46%	7
Ottawa	252,351	2.50%	58.95%	8
Kalamazoo	240,724	2.38%	61.33%	9
Saginaw	209,062	2.07%	63.40%	10
Livingston	177,538	1.76%	65.16%	11
Muskegon	174,401	1.72%	66.88%	12
St. Clair	170,916	1.69%	68.57%	13
Berrien	163,125	1.61%	70.18%	14
Jackson	162,973	1.61%	71.80%	15
Monroe	152,552	1.51%	73.30%	16
Calhoun	139,067	1.38%	74.68%	17
Allegan	112,477	1.11%	75.79%	18
Bay	109,480	1.08%	76.87%	19
Eaton	107,056	1.06%	77.93%	20
Lenawee	101,768	1.01%	78.94%	21
Lapeer	92,510	0.91%	79.85%	22
Midland	84,615	0.84%	80.69%	23
Grand Traverse	82,752	0.82%	81.51%	24
Van Buren	78,541	0.78%	82.29%	25
Shiawassee	73,125	0.72%	83.01%	26
Clinton	68,800	0.68%	83.69%	27
Marquette	64,874	0.64%	84.33%	28
Isabella	64,481	0.64%	84.97%	29
Ionia	64,378	0.64%	85.60%	30
Montcalm	63,627	0.63%	86.23%	31
St. Joseph	62,964	0.62%	86.86%	32
State of Michigan Total	10,112,620			

Table 2. 2004 Vehicle Miles of Travel by Stratum
[Source: Michigan Department of Transportation]

	VMT (2004) (in Thousands)	Total VMT (in Thousands)	Percent of Total VMT	Number of Sites
Stratum 1				
Ingham	2,589,095	22,048,241	25.06%	48
Kalamazoo	2,603,446			
Oakland	13,113,695			
Washtenaw	3,742,005			
Total Stratum 1 VMT				
Stratum 2				
Allegan	1,234,491	23,439,396	26.64%	50
Bay	1,325,042			
Eaton	1,189,516			
Grand Traverse	806,758			
Jackson	1,723,634			
Kent	5,773,450			
Livingston	1,954,324			
Macomb	6,527,891			
Midland	827,006			
Ottawa	2,077,284			
Total Stratum 2 VMT				
Stratum 3				
Berrien	2,180,694	23,930,076	27.19%	53
Calhoun	1,731,659			
Clinton	1,140,428			
Genesee	4,731,531			
Ionia	714,959			
Isabella	587,432			
Lapeer	892,081			
Lenawee	898,211			
Marquette	629,897			
Monroe	2,143,438			
Montcalm	589,027			
Muskegon	1,447,105			
Saginaw	2,259,369			
Shiawassee	779,541			
St. Clair	1,624,723			
St. Joseph	579,553			
Van Buren	1,000,428			
Total Stratum 3 VMT				
Stratum 4				
Wayne	18,575,126	18,575,126	21.11%	41
Total Stratum 4 VMT				
Total Strata VMT		87,992,839	100%	192

The locations of the 192 observation sites were randomly selected from intersections and limited access highways. The sites were randomly chosen in the 2005 Evaluation of May *Click It or Ticket* study using a method that ensured an equal probability for each location in each stratum being selected as a candidate study location. For the selection of the candidate locations, large equal scale (3/8 inch = 1 mile) road maps were obtained for each county. A computerized grid was overlaid on each county map at 0.5-mile intervals in the horizontal and vertical directions of the map. These squares represented a square area of 0.25 square miles. For the selection of intersection, each grid on the county map was assigned two numbers representing an X and Y coordinate and was also assigned a number by stratum. For each stratum, a random number was chosen between one and the number of grids covering the stratum. Then two additional random numbers were selected representing the X and Y coordinates of the selected grid. Random coordinates were chosen until an intersection was found located in the grid coordinates. This process was repeated until the required number of intersection observation sites were selected for all four strata. In addition, alternative secondary intersections were selected for each primary intersection. Secondary intersections were selected within a 16 square mile area from the primary intersection location. For the selection of observation sites along limited access highways, exit ramps were selected. This was done by sequentially numbering all the exit ramps on limited access highways located within each stratum. Random numbers were then selected between one and the number of ramps to determine which exit ramps would be considered as candidate observation locations. An alternate exit ramp was also selected for each candidate observation location.

Upon the determination of the sites, the direction of traffic flow, day of the week and time of day at each observation location was determined through a similar random sampling method ensuring equal probability. For each intersection randomly selected, the direction of traffic flow for observation was also randomly selected. Random numbers between one and four were assigned for each primary and secondary intersection's direction of traffic movement. The selected random numbers represented "1" for eastbound, "2" for southbound, "3" for westbound and "4" for northbound. This process allowed a random selection of the direction of traffic flow as well as the roadway for inclusion in the observation study. In order to minimize the travel time and

distance required to conduct this study, the observation sites were clustered into geographic regions upon final selection without compromising the randomness of the data.

3.0 OBSERVATIONAL STUDY DATA COLLECTION

For each selected observation site, a minimum of 50 vehicles were observed in at least a 50-minute time frame. If 50 observations were not completed in 50 minutes, the observer stayed longer at the same location and collected safety belt use data until 50 observations were captured at that site. These observations were appropriately reweighted, as explained in the Data Analysis Section of this report. The data collected for the 192 observation sites provided an accurate representation for each day of the week and each hour of the day for the safety belt use characteristics of the state.

Only non-moving vehicles were observed at each site, due to the difficulty of accurately observing the safety belt use data while the target vehicle is moving. This included vehicles stopped at a stop sign or at a red light of a traffic signal. Since it is not possible to accurately observe all vehicles passing the observation site, while collecting the safety belt use data, a 10-minute traffic count of all vehicles passing the observation point was the basis for estimating the number of vehicles passing the observation site per unit of time. This data introduced a weighting factor for each observation site. The 10-minute count was collected in two 5-minute intervals; five minutes prior to the observational period and five minutes following the observational period.

Data collection for the Annual Direct Observation Survey occurred between August 10, 2007 and September 16, 2007.

The driver of each vehicle and the passenger in the front right seat of the vehicle were observed for safety belt use, non-use and misuse. The driver belt observational categories included Not Belted, Belted, Shoulder Belt Behind Back, and Should Belt Under Arm. The passenger belt categories were the same as the driver belt categories and also included the observation of child

seats when present in the front passenger seat. In the surveys, both the driver and front-seat passenger were separately identified based upon their gender, estimated age and race. The driver age categories included 16-29, 30-59, and 60 and over. The passenger age categories included 0-3, 4-15, 16-29, 30-59, and 60 and over. The driver and passenger races were categorized as Caucasian, African American, Asian or Pacific Islander, Hispanic, and Native American. The vehicles were categorized into four groups: Passenger Vehicles, Sport Utility Vehicles, Vans or Minivans, and Pick-up Trucks. The vehicles were also identified as being Commercial or Non-commercial vehicles.

The data collected in the field was recorded and returned to the office; observations were manually recorded on survey forms and returned back to the office within 24 hours of the data collection. This manual method was chosen due to concerns with computer screen visibility in sunlight or rainy conditions. The WSU-TRG believes that the manual method also increases the accuracy and data verification at the time of data entry.

4.0 OBSERVER TRAINING

Members of the WSU-TRG staff participated in the data collection for this project. Each of these staff members has or is pursuing an engineering degree and has been trained in general traffic data collection methods and procedures. For this project, each data collector received specific training composed of a day-long workshop, technical assistance, and field data collection exercises. Each member of the data collection team participated in a reliability and repeatability study to reach a 95 percent or greater reliability and repeatability in their field data collection tests prior to being deployed for the data collection for this project. The repeatability of a measurement depends on the within-subject standard deviation, which can be calculated using a sample of closely repeated measurements. The repeatability coefficient is simply the within-subject standard deviation adjusted by a probability-based factor and is an estimate of the maximum difference likely to occur between two successive measurements on the same subjects. Reliability concerns the extent to which repeated measurements by the same method on the same subject produce the same result.

The reliability and repeatability study was performed at one of the selected sample intersections for this project, Woodward Avenue and Warren Avenue, near the Wayne State University campus in Detroit, Michigan. This intersection represents a typical high volume intersection that could be challenging for observational data collection. For two hours, two observers were randomly paired and assigned to collect safety belt observational data for one direction of traffic flow at the selected intersection. Although the observers were observing the same traffic flow direction, they did not interact and did not necessarily observe the same vehicles. They were located physically apart to ensure the independence of their data collection.

The data was then summarized for each paired individual to determine the accuracy of their observations. Accuracy for each data collection entity was calculated greater than 95 percent. This training was given to the data collectors approximately two months prior to the first wave of field data collection. Upon completion of the training for the data collection, each member of the team received a training manual composed of the information received during the training session, the schedule of data collection and all necessary field supplies.

Two field supervisors monitored the performance of the field observers. In order to establish a baseline reference of ‘expected’ safety belt use rates, preliminary observation data from previous studies was obtained for each stratum. The field data collectors submitted their observation data on a daily basis and it was immediately entered and compiled on computer spreadsheets at our WSU campus office. Comparisons were then made between the observed rates and the ‘expected’ safety belt use rates during the first statewide survey in order to identify any unexpected deviations in the data. Deviations were not found to be substantially different than anticipated.

5.0 DATA ANALYSIS

The data collected in the field was computerized by a team member and verified for accuracy. Rates for safety belt use were determined for each survey stratum, county, location, etc., as well as the statewide average. A 95 percent confidence interval for the estimate of safety belt use was determined in order to meet the guidelines of NHTSA.

5.1 Weighted Safety Belt Use Calculations

The weighting by the number of vehicles observed with the total possible number of vehicles passing the observation point has been performed as described in the following calculations. First the number of vehicles observed at each intersection by the length of the observation time and then multiplying that value by a standard 50-minute observational period. This calculation provides the total number of vehicles that passed the observation point in a standard 50-minute period. The number of vehicles observed in the 10-minute volume count was then multiplied by 5 to represent the total number of vehicles available for observation. The total number of vehicles was then divided by the adjusted number of vehicles observed passing the observation point. The resulting factor was the volume weighting factor for that particular intersection. The total number of drivers and passengers belted and not belted were then multiplied by the weighting factor to obtain the total number of weighted drivers and passengers that were belted and not belted. The weighted overall safety belt use rate by stratum was then determined by dividing the total number of belted drivers and passengers by the total number of drivers and passengers. The following calculations further describe the procedure outlined above.

Lenawee County, Clinton Macon Road and Tecumseh Road Intersection

Survey length = 60 minutes

Number of vehicles observed in 60 minutes = 53 vehicles

10-minute volume count = 20 vehicles

Standard 50-minute observational frequency (Adjusted number of vehicles) =

$$\frac{\text{Number of Vehicles Observed}}{\text{Survey Length}} \times 50 \text{ minutes} = \frac{53 \text{ vehicles}}{60 \text{ minutes}} \times 50 \text{ minutes} = 44 \text{ vehicles in 50 minutes}$$

Total number of vehicles available for observation = 10-minute vehicle count x 5 =

$$20 \text{ vehicles} \times 5 \text{ intervals} = 100 \text{ vehicles in 50 minutes}$$

$$\text{Intersection volume weighting factor} = \frac{\text{Total Number of Vehicles}}{\text{Adjusted Number of Vehicles}} = \frac{100}{44} = 2.27$$

The variance for each stratum was determined by following Cochran's equation [9] as follows:

$$Variance = \frac{n}{n-1} \sum_i \left(\frac{g_i}{\sum g_k} \right)^2 (r_i - r)^2 \quad [9]$$

Where.

n = number of observation locations

g_i = number of observations at each location

g_k = total number of observations within a stratum

r_i = safety belt use rate for each strata

r = overall safety belt use rate

5.2 Overall Statewide Safety Belt Use Calculations

The weighted safety belt use rate was calculated by summing up the strata safety belt use rates, each multiplied by a vehicle miles of travel weighting factor for that stratum, divided by the sum of the vehicle miles of travel weighting factor. The 2005 vehicle miles of travel from the Michigan Department of Transportation as shown in Table 3 were used for these calculations. The four vehicle miles of travel totals were compared and Stratum 3 had the highest total, 24,143,670 thousand, and was assigned a factor of 1.0. The other three strata's weighting factors were determined by dividing the vehicle miles of travel for that stratum by Stratum 3's vehicle miles of travel. Stratum 1 was assigned a weighting factor equal to 0.93 (22,395,310 VMT divided by 24,143,670 VMT). Stratum 2 was assigned a weighting factor equal to 0.99 (23,826,636 VMT divided by 24,143,670 VMT). Stratum 4 was assigned a weighting factor equal to 0.79 (19,126,505 VMT divided by 24,143,670 VMT). The total weighting factors equaled 3.71.

The overall statewide variance was calculated in a similar manner as the overall statewide safety belt use rate. The overall statewide variance was found by summing the product of each stratum's variance by the squared weighting factor and divided by the sum of the squared weighting factors.

Table 3. 2005 Vehicle Miles of Travel by Stratum
[Source: Michigan Department of Transportation]

	VMT (2005) (in Thousands)	Total VMT (in Thousands)
Stratum 1		
Ingham	2,625,148	22,395,310
Kalamazoo	2,591,189	
Oakland	13,404,441	
Washtenaw	3,774,532	
Total Stratum 1 VMT		
Stratum 2		
Allegan	1,257,567	23,826,636
Bay	1,334,442	
Eaton	1,176,247	
Grand Traverse	772,081	
Jackson	1,742,254	
Kent	5,985,114	
Livingston	2,030,067	
Macomb	6,673,529	
Midland	839,488	
Ottawa	2,015,847	
Total Stratum 2 VMT		
Stratum 3		
Berrien	2,170,115	24,143,670
Calhoun	1,736,733	
Clinton	1,181,776	
Genesee	4,818,106	
Ionia	723,027	
Isabella	589,695	
Lapeer	889,313	
Lenawee	891,599	
Marquette	621,616	
Monroe	2,086,037	
Montcalm	591,281	
Muskegon	1,542,728	
Saginaw	2,257,216	
Shiawassee	790,294	
St. Clair	1,666,026	
St. Joseph	575,648	
Van Buren	1,012,460	
Total Stratum 3 VMT		
Stratum 4		
Wayne	19,126,505	19,126,505
Total Stratum 4 VMT		
Total Strata VMT		89,492,121

The 95 percent confidence interval is equal to the weighted safety belt use rate plus/minus 1.96 (for the Z-test at $\alpha = 0.05$) multiplied by the square root of the stratum's or statewide variance expressed as a percent. The standard error is equal to the square root of the variance. The relative error must be less than five percent according to NHTSA guidelines and is equal to the standard error divided by the weighted statewide safety belt use rate.

The data was also analyzed and compared with studies from previous years to assess the progress of the safety belt campaign by the State of Michigan.

6.0 RESULTS AND CONCLUSIONS

6.1 Annual Direct Observation Survey

The Annual Direct Observational Survey was performed between Friday, August 10th and Sunday, September 16th of 2007. During this observation period, a total of 15,535 observations were made at 192 observation sites randomly selected to represent statewide safety belt use.

The overall weighted statewide safety belt use rates are shown in Table 4. The overall weighted statewide safety belt use rates were calculated based upon the procedure described in the "Overall Statewide Safety Belt Use Calculations" section in the Data Analysis section of the report. The weighted percent of safety belt use referenced in the summary tables has been calculated per the "Weighted Safety Belt Use Calculations" as detailed in the Data Analysis section of this report. When the safety belt usage rates were calculated, belted occupants included drivers belted, front-seat passengers belted, and front-seat child passengers belted in a child seat. The non belted occupants included drivers and front-seat passengers not belted, belted under their arm and belted behind their back.

Table 4. Statewide Weighted Safety Belt Use Rate for Drivers and Front-Seat Passengers

Observational Wave	Safety Belt Use Rate	Standard Error	Relative Error
Annual Direct Observational Survey	93.7% \pm 0.63%	0.32%	0.34%
June Statewide Post-Enforcement Survey	93.3% \pm 0.60%	0.31%	0.33%

The findings for the Annual Observational Survey for the strata are shown in Table 5. Additional breakdowns of the safety belt use rates and standard error at a county level are provided in Appendix II. Complete details of the observations on an intersection level are provided in Appendix III.

Table 5. Weighted Safety Belt Use Rate for Drivers and Front-Seat Passengers by Stratum

Stratum	Annual Direct Observational Survey		June Statewide Survey	
	Safety Belt Usage Rate*	Standard Error	Safety Belt Usage Rate*	Standard Error
Stratum 1	94.4% \pm 1.04%	0.53%	94.3% \pm 1.18%	0.60%
Stratum 2	94.6% \pm 0.52%	0.26%	94.5% \pm 0.77%	0.39%
Stratum 3	93.1% \pm 1.25%	0.64%	92.7% \pm 1.59%	0.81%
Stratum 4	92.7% \pm 2.06%	0.11%	91.3% \pm 1.02%	0.52%

* Weighted Safety Belt Usage \pm 95% Confidence Band

Table 6 summarizes the descriptive statistics regarding the Annual Observation Survey for the vehicles, in terms of day of the week and time of the day.

Table 6. Statewide Descriptive Statistics

Day of the Week	Annual Safety Belt Observations			
	No. of Sites Observed	Percent of Sites in Day of Week	Actual Total No. of Observations (Vehicles)	Percent of Observations in Day of Week (Vehicles)
Sunday	24	12.5%	1,842	11.9%
Monday	23	12.0%	1,963	12.6%
Tuesday	27	14.0%	1,829	11.8%
Wednesday	29	15.1%	2,518	16.2%
Thursday	36	18.8%	2,815	18.1%
Friday	24	12.5%	1,758	11.3%
Saturday	29	15.1%	2,810	18.1%
Total	192	100%	15,535	100%
Time of the Day	Annual Safety Belt Observations			
	No. of Sites Observed	Percent of Sites in Time of Day	Actual Total No. of Observations (Vehicles)	Percent of Observations in Time of Day (Vehicles)
7 am – 8 am	1	0.5%	100	0.6%
8 am – 9 am	6	3.1%	519	3.4%
9 am – 10 am	16	8.3%	1,260	8.1%
10 am – 11 am	17	8.9%	1,475	9.5%
11 am – 12 pm	21	10.9%	1,661	10.7%
12 pm – 1 pm	26	13.6%	2,145	13.8%
1 pm – 2 pm	30	15.6%	2,100	13.5%
2 pm – 3 pm	22	11.5%	1,658	10.7%
3 pm – 4 pm	23	12.0%	1,735	11.2%
4 pm – 5 pm	15	7.8%	1,492	9.6%
5 pm – 6 pm	9	4.7%	827	5.3%
6 pm – 7 pm	6	3.1%	563	3.6%
Total	192	100%	15,535	100%

The safety belt use rate can be described by the overall use rate, by stratum, by vehicle type and by various demographics. Table 7 summarizes the safety belt use rate for the statewide survey by driver, front-seat passenger and total observations. As shown in Table 7, driver safety belt use decreased by 0.9 percent and front-seat passenger safety belt use decreased by 0.5 percent as compared with the 2006 Annual Observation Survey. It should be noted that the weighted safety belt use rates provided in Table 5 and Tables 7 through 18 vary from those provided in Table 4. The overall statewide weighted safety belt use percentages provided in Table 4 are calculated by weighting the safety belt use rates by VMT by stratum (as described in Section 5.2 Overall Statewide Safety Belt Use Calculations). The weighted safety belt use rates provided in Table 5 and Tables 7 through 18 are calculated by utilizing the intersection weighting factors (as described in Section 5.1 Weighted Safety Belt Use Calculations). As the data presented in Table 5 and Tables 7 through 18 are not subdivided by county or strata, the overall state weighted safety belt use rates utilizing the VMT calculation are not applicable.

Table 7. Statewide Safety Belt Use Summary

Driver Belt Use	Actual Total # of Obs. (Drivers Only)	Weighted Total # of Obs. (Drivers Only)	Weighted % of SBU (Drivers Only)
Not Belted	928	3,419	5.8%
Belted	14,550	54,910	93.8%
Belted Under Arm	33	100	0.2%
Belted Behind Back	24	90	0.2%
Total	15,535	58,519	100%

Table 7. Statewide Safety Belt Use Summary (Continued)

Passenger Belt Use	Actual Total # of Obs. (Passengers Only)	Weighted Total # of Obs. (Passengers Only)	Weighted % of SBU (Passengers Only)
Not Belted	267	1,066	6.5%
Child Seat	6	20	0.1%
Belted	4,042	15,082	92.6%
Belted Under Arm	27	79	0.5%
Belted Behind Back	13	43	0.3%
Total	4,355	16,290	100%
Total Belt Use	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Not Belted	1,195	4,485	6.0%
Child Seat	6	20	0.1%
Belted	18,592	69,992	93.5%
Belted Under Arm	60	179	0.2%
Belted Behind Back	37	133	0.2%
Total	19,890	74,809	100%

Table 8 summarizes the statewide driver and front-seat passenger safety belt use rates by stratum and county. In Table 8, the counties are listed by stratum. Strata 1 and 4 experienced a decrease in safety belt use, Stratum 2 remained the same, and Stratum 3 experienced a 0.5 percent increase in safety belt use. Because of the relatively low number of sites and/or observations in many counties, the safety belt use rates listed may not be fully representative of each county. The use rates indicated are the weighted average of the observations taken in each county.

Table 8. Statewide Safety Belt Use Rates by Stratum and County

Stratum 1	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Ingham County	1,238	3,676	95.4%
Kalamazoo County	725	2,275	89.2%
Oakland County	1,380	6,932	94.0%
Washtenaw County	1,376	6,498	96.0%
Total	4,719	19,381	94.4%
Stratum 2	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Allegan County	319	330	94.9%
Bay County	322	1,028	96.5%
Eaton County	1,180	3,138	95.2%
Grand Traverse County	142	427	94.9%
Jackson County	359	781	94.6%
Kent County	884	3,200	94.6%
Livingston County	825	1,808	95.3%
Macomb County	580	3,197	93.9%
Midland County	367	764	91.0%
Ottawa County	157	347	93.7%
Total	5,135	15,020	94.6%

Table 8. Statewide Safety Belt Use Rates by Stratum and County (Continued)

Stratum 3	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Berrien County	334	823	93.0%
Calhoun County	546	821	95.4%
Clinton County	499	1,066	96.0%
Genesee County	1,019	2,384	90.4%
Ionia County	298	364	92.6%
Isabella County	111	107	86.9%
Lapeer County	148	625	89.0%
Lenawee County	226	671	84.2%
Marquette County	366	708	95.5%
Monroe County	543	1,409	94.4%
Montcalm County	290	467	91.7%
Muskegon County	420	809	92.2%
Saginaw County	80	102	94.1%
Shiawassee County	249	726	96.3%
St. Clair County	281	899	95.6%
St. Joseph County	239	667	95.2%
Van Buren County	314	907	96.1%
Total	5,963	13,555	93.1%
Stratum 4	Actual Total # of Obs. (Drivers & Passengers)	Weighted Total # of Obs. (Drivers & Passengers)	Weighted % of SBU (Drivers & Passengers)
Wayne County	4,073	26,853	92.7%

Tables 9 through 13 summarize occupant safety belt use for drivers and front-seat passengers by vehicle type for the day of the week, time of the day, gender, age and race for the Annual Observation Survey.

Table 9. All Vehicles Statewide Summary

Day of the Week	All Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	2,385	6,045	93.4%
Monday	2,463	13,742	94.5%
Tuesday	2,307	11,029	92.4%
Wednesday	3,122	13,628	93.0%
Thursday	3,582	12,565	92.9%
Friday	2,155	5,699	93.6%
Saturday	3,876	12,101	95.1%
Total	19,890	74,809	93.6%
Time of Day	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
7 am – 8 am	126	819	88.9%
8 am – 9 am	619	3,685	88.7%
9 am – 10 am	1,546	5,221	94.0%
10 am – 11 am	1,889	8,541	93.2%
11 am – 12 pm	2,052	6,839	94.4%
12 pm – 1 pm	2,738	9,680	93.5%
1 pm – 2 pm	2,670	7,547	93.7%
2 pm – 3 pm	2,083	7,721	95.4%
3 pm – 4 pm	2,234	10,471	92.4%
4 pm – 5 pm	2,092	7,321	94.1%
5 pm – 6 pm	1,113	4,837	95.5%
6 pm – 7 pm	728	2,127	95.2%
Total	19,890	74,809	93.6%

Table 9. All Vehicles Statewide Summary (Continued)

Vehicle Type	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Passenger Cars	9,161	35,846	94.1%
Sport Utility	4,219	16,185	95.4%
Vans/Minivans	2,905	11,025	93.8%
Pick-up Trucks	3,605	11,753	89.4%
Total	19,890	74,809	93.6%
Gender	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	10,725	40,408	91.8%
Female	9,165	34,401	95.8%
Total	19,890	74,809	93.6%
Age	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
0-3	11	30	96.7%
4-15	461	1,729	93.5%
16-29	4,896	19,643	90.5%
30-59	12,189	44,772	94.6%
60+	2,333	8,635	95.3%
Total	19,890	74,809	93.6%
Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Caucasian	17,595	61,491	94.3%
African American	1,929	11,324	89.8%
Asian or Pacific Islander	176	1,137	97.6%
Hispanic	188	851	91.2%
Native American	2	6	100%
Total	19,890	74,809	93.6%

Table 10. Passenger Cars Statewide Summary

Day of the Week	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	1,118	2,794	93.5%
Monday	1,172	6,797	94.5%
Tuesday	1,121	5,701	93.7%
Wednesday	1,489	6,806	92.9%
Thursday	1,571	5,481	93.7%
Friday	877	2,488	96.0%
Saturday	1,813	5,779	95.4%
Total	9,161	35,846	94.1%
Time of Day	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
7 am – 8 am	64	416	93.8%
8 am – 9 am	280	1,716	86.8%
9 am – 10 am	671	2,368	93.4%
10 am – 11 am	798	3,764	94.9%
11 am – 12 pm	914	3,318	95.4%
12 pm – 1 pm	1,272	4,652	94.4%
1 pm – 2 pm	1,194	3,408	93.6%
2 pm – 3 pm	990	4,076	95.7%
3 pm – 4 pm	1,040	5,074	92.8%
4 pm – 5 pm	1,026	3,646	93.9%
5 pm – 6 pm	545	2,327	97.0%
6 pm – 7 pm	367	1,081	94.9%
Total	9,161	35,846	94.1%

Table 10. Passenger Cars Statewide Summary (Continued)

Gender	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	4,409	17,424	92.7%
Female	4,752	18,422	95.4%
Total	9,161	35,846	94.1%
Age	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
0-3	4	16	100%
4-15	169	654	92.7%
16-29	2,895	11,742	91.2%
30-59	4,819	18,488	95.7%
60+	1,274	4,946	95.2%
Total	9,161	35,846	94.1%
Race	Passenger Cars Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Caucasian	7,847	28,183	95.0%
African American	1,153	6,745	89.9%
Asian or Pacific Islander	86	532	98.1%
Hispanic	75	386	93.3%
Total	9,161	35,846	94.1%

Table 11. Sport Utility Vehicles Statewide Summary

Day of the Week	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	470	1,218	95.3%
Monday	533	2,910	95.8%
Tuesday	431	2,183	94.8%
Wednesday	723	3,031	95.8%
Thursday	742	2,667	95.8%
Friday	433	1,142	91.6%
Saturday	887	3,034	95.8%
Total	4,219	16,185	95.4%
Time of Day	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted Total # of Obs.
7 am – 8 am	20	130	100%
8 am – 9 am	160	895	94.3%
9 am – 10 am	347	1,155	96.4%
10 am – 11 am	412	1,967	96.1%
11 am – 12 pm	390	1,239	96.2%
12 pm – 1 pm	544	1,967	93.3%
1 pm – 2 pm	580	1,624	94.5%
2 pm – 3 pm	394	1,439	97.2%
3 pm – 4 pm	478	2,233	95.7%
4 pm – 5 pm	472	1,786	95.5%
5 pm – 6 pm	274	1,305	94.0%
6 pm – 7 pm	148	445	96.4%
Total	4,219	16,185	95.4%

Table 11. Sport Utility Vehicles Statewide Summary (Continued)

Gender	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	2,023	7,904	94.3%
Female	2,196	8,281	96.4%
Total	4,219	16,185	95.4%
Age	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
0-3	2	3	100%
4-15	108	408	96.1%
16-29	876	3,588	91.7%
30-59	2,910	11,003	96.5%
60+	323	1,183	95.4%
Total	4,219	16,185	95.4%
Race	Sport Utility Vehicles Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Caucasian	3,780	13,594	96.0%
African American	343	2,048	90.8%
Asian or Pacific Islander	54	350	98.6%
Hispanic	42	193	93.3%
Total	4,219	16,185	95.3%

Table 12. Vans/Minivans Statewide Summary

Day of the Week	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	309	824	96.7%
Monday	353	1,978	96.1%
Tuesday	369	1,840	91.0%
Wednesday	457	1,960	93.0%
Thursday	569	2,071	91.9%
Friday	337	851	93.9%
Saturday	511	1,501	96.1%
Total	2,905	11,025	93.8%
Time of Day	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
7 am – 8 am	36	234	77.8%
8 am – 9 am	95	571	95.6%
9 am – 10 am	222	799	96.5%
10 am – 11 am	314	1,475	90.6%
11 am – 12 pm	328	1,022	95.4%
12 pm – 1 pm	373	1,282	94.4%
1 pm – 2 pm	382	1,075	97.2%
2 pm – 3 pm	306	1,093	97.3%
3 pm – 4 pm	319	1,527	89.5%
4 pm – 5 pm	272	944	94.8%
5 pm – 6 pm	166	732	94.7%
6 pm – 7 pm	92	271	94.5%
Total	2,905	11,025	93.8%

Table 12. Vans/Minivans Statewide Summary (Continued)

Gender	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	1,415	5,627	91.2%
Female	1,490	5,398	96.5%
Total	2,905	11,025	93.8%
Age	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
0-3	1	2	100%
4-15	105	426	93.7%
16-29	392	1,578	89.4%
30-59	2,021	7,520	94.1%
60+	386	1,499	96.9%
Total	2,905	11,025	93.8%
Race	Vans/Minivans Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Caucasian	2,545	8,879	94.3%
African American	294	1,769	90.8%
Asian or Pacific Islander	25	187	97.3%
Hispanic	39	184	92.9%
Native American	2	6	100%
Total	2,905	11,025	93.8%

Table 13. Pick-up Trucks Statewide Summary

Day of the Week	Pick-up Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Sunday	488	1,209	89.2%
Monday	405	2,057	91.3%
Tuesday	386	1,305	84.8%
Wednesday	453	1,831	88.7%
Thursday	700	2,346	88.7%
Friday	508	1,218	90.4%
Saturday	665	1,787	92.1%
Total	3,605	11,753	89.4%
Time of Day	Pick-up Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
7 am – 8 am	6	39	66.7%
8 am – 9 am	84	503	77.3%
9 am – 10 am	306	899	90.2%
10 am – 11 am	365	1,335	87.0%
11 am – 12 pm	420	1,260	89.2%
12 pm – 1 pm	549	1,779	90.6%
1 pm – 2 pm	514	1,440	90.7%
2 pm – 3 pm	393	1,113	90.4%
3 pm – 4 pm	397	1,637	89.1%
4 pm – 5 pm	322	945	91.6%
5 pm – 6 pm	128	473	93.0%
6 pm – 7 pm	121	330	94.8%
Total	3,605	11,753	89.4%

Table 13. Pick-up Trucks Statewide Summary (Continued)

Gender	Pick-up Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	2,878	9,453	88.1%
Female	727	2,300	94.9%
Total	3,605	11,753	89.4%
Age	Pick-up Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
0-3	4	9	88.9%
4-15	79	241	90.9%
16-29	733	2,735	86.4%
30-59	2,439	7,761	90.0%
60+	350	1,007	93.1%
Total	3,605	11,753	89.4%
Race	Pick-up Trucks Safety Belt Use		
	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Caucasian	3,423	10,835	90.0%
African American	139	762	83.2%
Asian or Pacific Islander	11	68	89.7%
Hispanic	32	88	73.9%
Total	3,605	11,753	89.4%

Overall, the occupants of sport utility vehicles have the highest safety belt use rates. Pick-up truck drivers and passengers have the lowest overall safety belt use rate of 89.4 percent. As compared to the 2006 Annual Observation Survey, sport utility vehicles were the only type of vehicle that had experienced an increase in safety belt use (0.3%).

The safety belt use rates varied among the different days of the week and by time of day with Saturday having the highest safety belt usage rate of 95.1 percent and the evening having slightly higher usage rates. Again, female occupants have higher use rates than their male counterparts by 4 percent. The safety belt usage rate was the highest for occupants between 0 to 3 years of age and drivers and front-seat passengers over the age of 60. In general, Caucasian and Asian or Pacific Islanders have the highest safety belt usage rates. The safety belt usage rate for Asian or Pacific Islanders had increased by 3.3 percent as compared to the 2006 Annual Observation Survey. Again, the low sample of Native American occupants does not allow conclusions to be drawn regarding their usage.

Tables 14 through 18 summarize occupant safety belt use rates by vehicle type demographically subdivided by gender and age. Male pick-up truck occupants continue to have the lowest rates of safety belt use (88.1%) followed by male van/minivan occupants (91.1%).

Table 14. All Vehicles Statewide Demographic Summary

Demographic Data			All Vehicles Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	0-3	Caucasian	9	24	100%
		Total	9	24	100%
	4-15	Caucasian	219	695	100%
		African American	21	164	100%
		Asian or Pacific Islander	3	18	100%
		Hispanic	2	6	100%
		Total	245	883	100%
	16-29	Caucasian	2,195	7,931	88.9%
		African American	330	1,837	79.5%
		Asian or Pacific Islander	26	185	89.7%
		Hispanic	54	212	95.3%
		Total	2,605	10,165	87.3%
	30-59	Caucasian	5,911	20,399	93.5%
		African American	593	3,538	89.9%
		Asian or Pacific Islander	59	399	98.2%
		Hispanic	67	321	86.0%
		Native American	1	3	100%
		Total	6,631	24,660	92.9%
	60+	Caucasian	1,187	4,285	94.8%
		African American	44	302	91.4%
		Asian or Pacific Islander	4	33	100%
		Total	1,235	4,620	94.6%
	TOTAL		10,725	40,352	91.9%

Table 14. All Vehicles Statewide Demographic Summary (Continued)

Demographic Data			All Vehicles Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Female	0-3	Caucasian	2	5	100%
		Total	2	5	100%
	4-15	Caucasian	185	631	94.9%
		African American	26	137	80.3%
		Asian or Pacific Islander	3	12	100%
		Hispanic	2	11	100%
		Total	216	791	92.5%
	16-29	Caucasian	1,912	7,203	95.1%
		African American	328	1,947	88.3%
		Asian or Pacific Islander	31	221	100%
		Hispanic	20	107	96.3%
		Total	2,291	9,478	93.8%
	30-59	Caucasian	4,942	16,655	96.9%
		African American	529	3,028	95.9%
		Asian or Pacific Islander	46	267	100%
		Hispanic	40	159	91.2%
		Native American	1	3	100%
		Total	5,558	20,112	96.7%
	60+	Caucasian	1,033	3,613	96.2%
		African American	58	367	95.1%
		Hispanic	7	35	88.6%
		Total	1,098	4,015	96.0%
	TOTAL		9,165	34,401	95.7%

Table 15. Passenger Cars Statewide Demographic Summary

Demographic Data			Passenger Cars Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	0-3	Caucasian	3	13	100%
		Total	3	13	100%
	4-15	Caucasian	82	281	90.7%
		African American	9	97	100%
		Total	91	378	93.1%
	16-29	Caucasian	1,120	3,894	91.4%
		African American	233	1,296	79.6%
		Asian or Pacific Islander	16	122	92.6%
		Hispanic	29	123	100%
		Total	1,398	5,435	88.8%
	30-59	Caucasian	1,983	7,292	94.9%
		African American	288	1,724	93.9%
		Asian or Pacific Islander	25	142	98.6%
		Hispanic	20	124	86.3%
		Total	2,316	9,282	94.6%
	60+	Caucasian	571	2,101	94.8%
		African American	28	198	88.9%
		Asian or Pacific Islander	2	17	100%
		Total	601	2,316	94.3%
	TOTAL		4,409	17,424	92.7%

Table 15. Passenger Cars Statewide Demographic Summary (Continued)

Demographic Data			Passenger Cars Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Female	0-3	Caucasian	1	3	100%
		Total	1	3	100%
	4-15	Caucasian	64	216	98.6%
		African American	13	58	67.2%
		Asian or Pacific Islander	1	2	100%
		Total	78	276	92.0%
	16-29	Caucasian	1,226	4,625	94.8%
		African American	245	1,493	87.7%
		Asian or Pacific Islander	17	140	100%
		Hispanic	9	49	98.0%
		Total	1,497	6,307	93.2%
	30-59	Caucasian	2,168	7,417	97.0%
		African American	297	1,620	95.8%
		Asian or Pacific Islander	21	109	100%
		Hispanic	17	60	88.3%
		Total	2,503	9,206	96.7%
	60+	Caucasian	629	2,341	96.2%
		African American	40	259	93.8%
		Hispanic	4	30	100%
		Total	673	2,630	96.0%
	TOTAL		4,752	18,422	95.4%

Table 16. Sport Utility Vehicles Statewide Demographic Summary

Demographic Data			Sport Utility Vehicle Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	0-3	Caucasian	2	3	100%
		Total	2	3	100%
	4-15	Caucasian	49	160	94.4%
		African American	3	16	100%
		Asian or Pacific Islander	1	9	100%
		Hispanic	2	6	100%
		Total	55	191	95.3%
	16-29	Caucasian	355	1,361	91.3%
		African American	46	265	75.1%
		Asian or Pacific Islander	6	48	89.6%
		Hispanic	6	30	100%
		Total	413	1,704	88.9%
	30-59	Caucasian	1,240	4,453	96.2%
		African American	111	663	92.6%
		Asian or Pacific Islander	21	151	100%
		Hispanic	14	68	94.1%
		Total	1,386	5,335	95.8%
	60+	Caucasian	162	642	96.0%
		African American	3	13	69.2%
		Asian or Pacific Islander	2	16	100%
		Total	167	671	95.5%
	TOTAL		2,023	7,904	94.3%

Table 16. Sport Utility Vehicles Statewide Demographic Summary (Continued)

Demographic Data			Sport Utility Vehicle Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Female	4-15	Caucasian	40	136	95.6%
		African American	10	66	98.5%
		Asian or Pacific Islander	2	10	100%
		Hispanic	1	5	100%
		Total	53	217	96.8%
	16-29	Caucasian	400	1,547	95.2%
		African American	48	249	85.9%
		Asian or Pacific Islander	9	51	100%
		Hispanic	6	37	100%
		Total	463	1,884	94.2%
	30-59	Caucasian	1,382	4,799	97.5%
		African American	118	761	95.8%
		Asian or Pacific Islander	13	65	100%
		Hispanic	11	43	86%
		Total	1,524	5,668	97.2%
	60+	Caucasian	150	493	95.5%
		African American	4	15	100%
		Hispanic	2	4	0%
		Total	156	512	94.9%
	TOTAL		2,196	8,281	96.4%

Table 16. Vans/Minivans Statewide Demographic Summary

Demographic Data			Vans/Minivans Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	4-15	Caucasian	38	162	95.7%
		African American	6	44	100%
		Total	44	206	96.6%
	16-29	Caucasian	157	599	83.3%
		African American	28	141	70.2%
		Asian or Pacific Islander	2	8	100%
		Hispanic	11	38	86.8%
		Total	198	786	81.3%
	30-59	Caucasian	839	2,978	92.7%
		African American	108	656	86.3%
		Asian or Pacific Islander	8	70	92.9%
		Hispanic	15	74	90.5%
		Native American	1	3	100%
		Total	971	3,781	91.6%
	60+	Caucasian	191	773	96.8%
		African American	11	81	100%
		Total	202	854	97.1%
	TOTAL		1,415	5,627	91.1%

Table 17. Vans/Minivans Statewide Demographic Summary (Continued)

Demographic Data			Vans/Minivans Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Female	0-3	Caucasian	1	2	100%
		Total	1	2	100%
	4-15	Caucasian	58	206	93.2%
		African American	2	8	12.5%
		Hispanic	1	6	100%
		Total	61	220	90.5%
	16-29	Caucasian	157	579	97.1%
		African American	29	170	96.5%
		Asian or Pacific Islander	4	25	100%
		Hispanic	4	18	100%
		Total	194	792	97.1%
	30-59	Caucasian	930	3,008	96.5%
		African American	100	596	96.8%
		Asian or Pacific Islander	11	84	100%
		Hispanic	8	48	97.9%
		Native American	1	3	100%
		Total	1,050	3,739	96.7%
	60+	Caucasian	174	572	96.3%
		African American	10	73	100%
		Total	184	645	96.7%
	TOTAL		1,490	5,398	96.5%

Table 17. Pick-up Trucks Statewide Demographic Summary

Demographic Data			Pick-up Trucks Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Male	0-3	Caucasian	4	9	88.9%
		Total	4	9	88.9%
	4-15	Caucasian	50	141	95.0%
		African American	3	11	63.6%
		Asian or Pacific Islander	2	11	81.8%
		Total	55	163	92.0%
	16-29	Caucasian	563	2,077	84.1%
		African American	23	135	97.0%
		Asian or Pacific Islander	2	7	28.6%
		Hispanic	8	21	76.2%
		Total	596	2,240	84.6%
	30-59	Caucasian	1,849	5,676	89.9%
		African American	86	495	77.6%
		Asian or Pacific Islander	5	36	100%
		Hispanic	18	55	69.1%
		Total	1,958	6,262	88.8%
	60+	Caucasian	263	769	91.9%
		African American	2	10	100%
		Total	265	779	92.0%
	TOTAL		2,878	9,453	88.1%

Table 18. Pick-up Trucks Statewide Demographic Summary (Continued)

Demographic Data			Pick-up Trucks Safety Belt Use		
Gender	Age	Race	Actual Total # of Obs.	Weighted Total # of Obs.	Weighted % of SBU
Female	4-15	Caucasian	23	73	87.7%
		African American	1	5	100%
		Total	24	78	88.5%
	16-29	Caucasian	129	452	95.4%
		African American	6	35	88.6%
		Asian or Pacific Islander	1	5	100%
		Hispanic	1	3	0%
		Total	137	495	94.3%
	30-59	Caucasian	462	1,431	95.0%
		African American	14	51	92.2%
		Asian or Pacific Islander	1	9	100%
		Hispanic	4	8	100%
		Total	481	1,499	95.0%
	60+	Caucasian	80	207	97.6%
		African American	4	20	90.0%
		Hispanic	1	1	100%
		Total	85	228	96.9%
	TOTAL		727	2,300	94.8%

6.2 Program Comparisons

Table 19 summarizes the findings of the 2005, 2006 and 2007 safety belt observational surveys for the *Click It or Ticket* Mobilization and the Annual Observation Survey. The 2007 Annual Survey resulted in a higher percentage of safety belt usage as compared to the 2007 pre and post enforcement periods; however the safety belt usage rate decreased by 0.6 percent as compared to the 2006 Annual Survey

Table 19. 2005, 2006 and 2007 Comparison

Year	2005			2006			2007		
Survey	Pre-Enforcement	Post-Enforcement	Annual	Pre-Enforcement	Post-Enforcement	Annual	Pre-Enforcement	Post-Enforcement	Annual
No. of Sites	192	192	168	192	192	192	192	192	192
Actual No. of Obs.	19,382	16,981	13,422	18,262	20,472	22,351	19,913	24,553	19,890
Weighted No. of Obs	36,021	36,842	NA	64,401	63,821	61,269	70,842	65,872	74,809
Safety Belt Use Percent	89.4%	92.9%	87.9%	89.9%	94.0%	94.3%	93.0%	93.3%	93.7%

Based upon the safety belt use rate trends shown in Figure 2, continued efforts in the media and with enforcement may reduce the variation between the surveys. Continued monitoring of the media and enforcement efforts will ensure adequate behavioral modifications are maintained throughout the year.

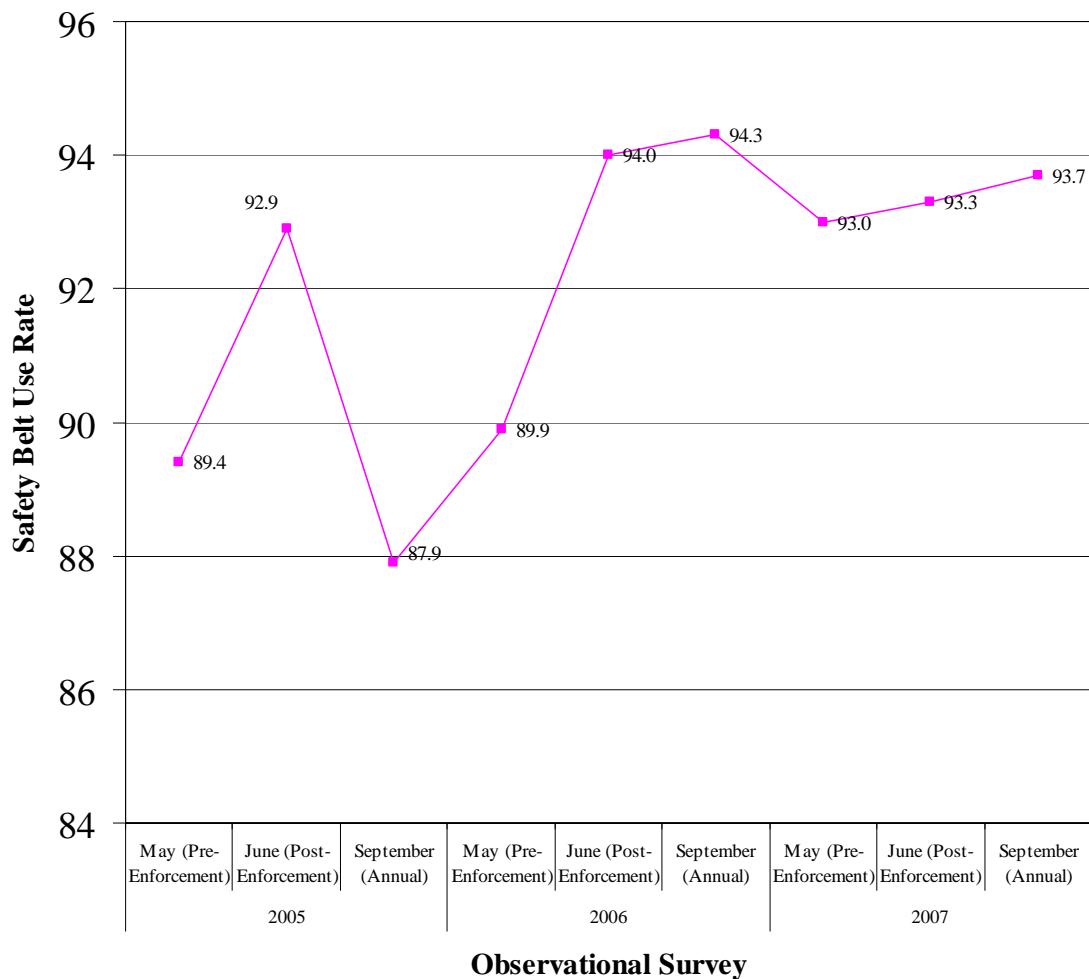


Figure 2. 2005 Through 2007 Safety Belt Use Rate Trends

6.3 Program Enhancements

As shown in the findings from the various observational surveys, males and pick-up drivers should be targeted in future campaigns. Continuing programs in urban areas should impact African American occupants while targeting a substantial portion of the state's population. This would indicate that continuing programs in urban centers may improve safety belt use rates.

The future potential of improving the safety belt use rate may yield a lower rate of increase. Future programs may focus on targeted areas where the safety belt use rates are still relatively low. For instance, Stratum 4 continues to have consistently lower safety belt usage rates.

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5. Michigan State Police, "Expanded Enforcement, New Advertisements Kick-Off Statewide *Click It or Ticket* Enforcement Effort," News Release, May 15, 2006.
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**APPENDIX I – COMPLETE LISTING OF THE OBSERVATIONAL
SITES IN MICHIGAN**

STRATUM 1	
County	Location No.
Ingham County	1. M-106 and M-52
	2. Lake Lansing and Hagadorn
	3. Barnes and Eden
	4. Michigan and Waverly
	5. M-43 and M-52
	6. M-43 and Williamston
	7. Barry and Zimmer
	8. Tihart and Cornell
	9. Holt and M-52
	10. Cavannah and Pennsylvania
	11. Rossman and Onodaga
	12. I-496 and Dunkel
	13. Cedar and US-127
	14. US-127 and Saginaw
Kalamazoo County	1. M-43 and 9 th
	2. M-89 and 43 rd
	3. H Ave and 30 th
	4. Sprinkle and Centre
	5. AB and M-89
	6. M-89 and 42 nd
	7. G and Riverview
	8. S Ave and 8 th
	9. S Ave and Sprinkle
	10. W Ave. and 2 nd
Oakland County	1. Taft and 9 Mile
	2. Northwestern and Middlebelt
	3. Clarkston and Baldwin
	4. Snell and Rochester
	5. 14 Mile and Main
	6. Holly and Grange Hall
	7. Grand River and Taft
	8. I-696 and Orchard Lake
	9. M-10 and 8 Mile
	10. I-696 and Woodward
	11. Walton and Lapeer
	12. Dixie and Davisburg
	13. I-75 and Sashabaw

Washtenaw County	1. Ann Arbor and East Main
	2. Saline-Milan and Mooreville
	3. Mooreville and Stony Creek
	4. Dixboro and North Territorial
	5. Austin and Schneider
	6. Geddes and Earhart
	7. Zeeb and North Territorial
	8. I-94 and Jackson
	9. I-94 and Huron/Whitaker
	10. I-94 and State
	11. Miller and Maple
STRATUM 2	
County	Location No.
Allegan County	1. 102 nd and 42 nd
	2. 30 th and 134 th
	3. US-131 and 135 th
	4. M-89 and US-131
Bay County	1. M-61 and Standish
	2. Kochville and Adams
	3. Finn and Munger
	4. I-75 and Pinconning
Eaton County	1. M-43 and Canal
	2. M-43 and M-50
	3. Nixon and Willow
	4. Royston and Island Highway
	5. Ainger and Battle Creek
	6. I-96 and Nash
	7. Battle Creek and Kalamo
	8. Washington and Lawrence
Grand Traverse County	1. M-72 and US-31
Jackson County	1. Rosehill and Elm
	2. Wolf Lake and Cady
	3. Michigan and Lake
	4. Michigan and US-127
	5. US-127 and Page
Kent County	1. 4 Mile and Walker
	2. Sparta and Ball Creek
	3. US-131 and 10 Mile
	4. US-131 and 84 th
	5. US-131 and 68 th
	6. 10 Mile and Wabasis
	7. 14 Mile and Lincoln Lake
	8. 17 Mile and Myers Lake

Livingston County	1. Grand River and Pleasant Valley
	2. M-36 and Dexter
	3. M-36 and M-106
	4. I-96 and Kensington
	5. US-23 and Clyde
	6. Old US-23 and M-59
Macomb County	1. Jefferson and Martin
	2. 22 Mile and Heydenreich
	3. Moravian and Harrington
	4. 27 Mile and Romeo Plank
	5. 34 Mile and Van Dyke
	6. 23 and Van Dyke
	7. I-696 and Groesbeck
Midland County	1. Redstone and 11 Mile
	2. Pine River and Badour
	3. Curtis and Lake Sanford
	4. Redstone and Coleman
	5. M-20 and Homer
Ottawa County	1. Lake Michigan and US-31
	2. Polk and 104 th
STRATUM 3	
County	Location No.
Berrien County	1. Pipestone and Naomi
	2. Lakeside and Union Pier
	3. I-94 and M-139
Calhoun County	1. 15 Mile and Michigan
	2. Evanston and Michigan
	3. B Drive and 5 Mile
	4. I-94 and 5 Mile
Clinton County	1. M-21 and Lowell
	2. M-21 and Shepardsville
	3. Hyde and Welling
	4. Main and Westphalia
	5. Clark and Upton
Genesee County	1. M-57 and Belsay
	2. Flushing and Ballenger
	3. Grand Blanc and Duffield
	4. Beecher and N Elms
	5. Mt. Morris and I-75
	6. I-475 and Court

Ionia County	1. Bridge and State
	2. Cross and Main
Isabella County	1. Blanchard and Winn
Lapeer County	1. M-24 and Coulter
	2. Otter Lake and Klam
Lenawee County	1. US-12 and Brooklyn
	2. Clinton Macon and Tecumseh
	3. M-50 and Pentecost Hwy
Marquette County	1. M-95 and Cr-LLK
	2. Washington and McClellan
Monroe County	1. Ostrander and Tuttle Hill
	2. Ostrander and Bunce
	3. Hull and Dunbar
	4. US-23 and US-223
	5. US-23 and Dixon
	6. US-23 and Plank
Montcalm County	1. Condensary and Crystal
	2. Sidney and Crystal
	3. M-91 and Sidney
Muskegon County	1. Blackmer and Ravenna
	2. Ravenna Heights and Maple Island
	3. Moorland and Ravenna Heights
Saginaw County	1. M-57/Fergus and Bishop
Shiawasee County	1. Grand River and M-52
	2. Juddville and Chipman
	3. I-69 and M-52
St. Clair County	1. Lambs and M-19
	2. Perch and M-29
	3. I-69 and Riley Center
St. Joseph County	1. Millard and US-131
	2. Banker and Klingor
Van Buren County	1. CR-681 and CR-384
	2. CR-380 and CR-681
	3. M-51 and CR-352
	4. I-196 and Phoenix

STRATUM 4	
County	Location No.
Wayne County	1. McNichols and Evergreen
	2. Telegraph and Northline
	3. Haggerty and Ecorse
	4. Wick and Wayne
	5. Eureka and Telegraph
	6. Woodward and Warren
	7. Palmer and Lilley
	8. Geddes and Canton Center
	9. Ecorse and Monroe
	10. Michigan and Greenfield
	11. Eureka and Middlebelt
	12. 7 Mile and Van Dyke
	13. Farmington and Plymouth
	14. Van Dyke and 6 Mile
	15. Vernier and Mack
	16. Van Horn and Inkster
	17. Outer Drive and Rotunda Village
	18. Annapolis and Wayne
	19. 8 Mile and Randolph
	20. Plymouth and Greenfield
	21. Goddard and Fort
	22. Grand River and 8 Mile
	23. 9 Mile and Greenfield
	24. Ford and Sheldon
	25. Vernier and Lake Shore Drive
	26. I-96 and Middlebelt
	27. I-96 and Livernois
	28. Warren and Southfield
	29. Randolph and Jefferson
	30. Greenfield and M-10
	31. Northline and I-75
	32. Schaefer and Grand River
	33. I-94 and Harper (Vernier)
	34. I-75 and Southfield
	35. Huron River and Sibley
	36. Rawsonville and Textile
	37. Main and Sumpter
	38. Sumpter and Oakville Waltz
	39. Waltz and Willow
	40. Savage and Haggerty/Bemis
	41. Rawsonville and Willis

APPENDIX II – STATEWIDE SAFETY BELT USE RATES BY COUNTY

Stratum and County	Annual Safety Belt Usage Observation	
	Safety Belt Usage Rate*	Standard Error
Stratum 1		
Ingham County	95.4% \pm 1.08%	0.55%
Kalamazoo County	89.2% \pm 1.71%	0.87%
Oakland County	94.0% \pm 1.64%	0.84%
Washtenaw County	96.0% \pm 1.55%	0.79%
Stratum 2		
Allegan County	94.9% \pm 2.22%	1.13%
Bay County	96.5% \pm 2.52%	1.29%
Eaton County	95.2% \pm 0.71%	0.36%
Grand Traverse County	94.9%	N/A
Jackson County	94.6% \pm 2.95%	1.50%
Kent County	94.6% \pm 0.74%	0.38%
Livingston County	95.3% \pm 1.19%	0.61%
Macomb County	93.9% \pm 1.25%	0.64%
Midland County	91.0% \pm 0.14%	0.07%
Ottawa County	93.7% \pm 6.56%	3.35%
Stratum 3		
Berrien County	93.0% \pm 6.56%	3.35%
Calhoun County	95.4% \pm 1.54%	0.79%
Clinton County	96.0% \pm 1.44%	0.73%
Genesee County	90.4% \pm 2.66%	1.36%
Ionia County	92.6% \pm 0.53%	0.27%
Isabella County	86.9%	N/A
Lapeer County	89.0% \pm 6.32%	3.23%
Lenawee County	84.2% \pm 12.21%	6.23%
Marquette County	95.5% \pm 3.20%	1.64%
Monroe County	94.4% \pm 0.62%	0.32%
Montcalm County	91.7% \pm 3.98%	2.03%
Muskegon County	92.2% \pm 3.09%	1.58%
Saginaw County	94.1%	N/A
Shiawassee County	96.3% \pm 0.41%	0.21%
St. Clair County	95.6% \pm 0.90%	0.46%
St. Joseph County	95.2% \pm 1.50%	0.77%
Van Buren County	96.1% \pm 0.71%	0.36%
Stratum 4 - Wayne County	92.7% \pm 2.06%	1.05%

* Weighted Safety Belt Usage \pm 95% Confidence Band

APPENDIX III – STATEWIDE SAFETY BELT USE RATES BY INTERSECTION

All Vehicle Safety Belt Use				
Stratum, County and Intersection	Statewide Pre-Enforcement			
	Actual Total # of Belted Obs.	Actual Total # of Obs.	Weighted Total # of Belted Obs.	Weighted Total # of Obs.
Stratum 1				
<i>Ingham County</i>				
US-127 & Saginaw	125	131	834	872
Barnes & Eden	56	59	108	113
Barry & Zimmer	59	62	57	60
Cavannah & Pennsylvania	77	79	266	273
Cedar & US-127	73	77	160	169
Holt & M-52	99	104	171	180
I-496 & Dunkel	68	70	152	157
Lake Lansing & Hagadorn	76	78	284	291
M-106 & M-52	85	90	400	424
M-43 & M-52	128	136	74	79
Michigan & Waverly	95	99	404	421
Williamston & M-43	93	97	347	362
Rossman & Onodaga	76	89	139	163
Tihart & Cornell	66	67	110	112
Total	1,176	1,238	3,506	3,676
<i>Kalamazoo County</i>				
AB & M-89	58	64	171	189
G & Riverview	102	116	482	548
H Ave & 30th	70	82	154	180
Sprinkle & Centre	69	77	101	112
M-43 & 9th	68	74	377	410
M-89 & 42nd	56	66	154	182
M-89 & 43rd	60	63	111	117
S Ave & Sprinkle	62	70	240	271
S Ave & 8th	48	54	162	183
W Ave & 2nd	55	59	78	83
Total	648	725	2,030	2,275
<i>Oakland County</i>				
14 Mile & Main	83	89	415	445
8 Mile & M-10	127	136	542	580
9 Mile & Taft	101	103	314	320
Clarkston & Baldwin	72	76	421	444

Dixie & Davisburg	69	78	274	310
Grand River & Taft	136	142	613	640
Holly & Grange Hall	80	89	369	411
I-696 & Orchard Lake	126	130	596	615
I-696 & Woodward	137	143	1,061	1,108
I-75 & Sashabaw	91	99	426	463
Northwestern & Middlebelt	119	124	619	645
Shell & Rochester	75	79	502	529
Walton & Lapeer	79	92	363	422
Total	1,295	1,380	6,515	6,932
<i>Washtenaw County</i>				
Ann Arbor & East Main	60	62	226	233
Austin & Schneider	59	63	101	108
Geddes & Earhart	128	132	289	298
I-94 & Huron/Whittaker	62	68	781	857
I-94 & Jackson	263	275	1,241	1,297
I-94 & State	204	210	1,715	1,765
Mooreville & Stoney Creek	62	62	260	260
Maple & Miller	144	148	760	781
North Territorial & Dixboro	150	155	258	267
North Territorial & Zeeb	125	132	214	226
Saline-Milan & Mooreville	67	69	394	406
Total	1,324	1,376	6,239	6,498
Stratum 2				
<i>Allegan County</i>				
102nd & 42nd	58	60	32	33
30th & 134th	65	71	70	76
M-89 & US-131	80	84	65	68
US-131 & 135th	100	104	146	153
Total	303	319	313	330
<i>Bay County</i>				
Finn & Munger	67	71	122	129
I-75 & Pinconning	93	98	415	438
Kochville & Westervelt	71	73	215	221
M-61 & Standish	80	80	240	240
Total	311	322	992	1,028

<i>Eaton County</i>				
Ainger & Battle Creek	90	94	116	121
I-96 & Nash	146	151	136	141
Battle Creek & Kalamo	145	149	199	205
M-43 & Canal	304	321	1,838	1,940
M-50 & M-43	99	104	120	126
Royston & Island Hwy	136	143	227	238
Washington & Lawrence	134	140	302	316
Willow & Nixon	75	78	49	51
Total	1,129	1,180	2,987	3,138
<i>Grand Traverse County</i>				
M-72 & M-31	135	142	405	427
Total	135	142	405	427
<i>Jackson County</i>				
Michigan & US-127	57	59	73	75
Michigan & Lake	77	85	187	207
Rosehill & Elm	71	73	172	177
US-127 & Page	80	83	208	216
Wolf Lake & Cady	55	59	99	106
Total	340	359	739	781
<i>Kent County</i>				
14 Mile & Lincoln Lake	102	109	325	347
4 Mile & Walker	121	126	487	507
US 131 & 84th	125	133	351	374
US-131 & 68th	119	126	641	677
10 Mile & Wabasis	81	86	258	274
Myers Lake & 17 Mile	88	97	111	123
Sparta & Ball Creek	95	99	383	400
US-131 & 10 Mile	102	108	470	498
Total	833	884	3,026	3,200
<i>Livingston County</i>				
Grand River & Pleasant Valley	140	147	195	204
I-96 & Kensington	157	159	174	177
M-36 & Dexter	82	88	159	171
M-36 & M-106	83	89	138	148
Old US-23 & M-59	250	261	984	1,027
US-23 & Clyde	73	81	73	81
Total	785	825	1,723	1,808

<i>Macomb County</i>				
22 Mile & Heydenreich	77	81	362	381
27 Mile & Romeo Plank	70	75	261	280
Groesbeck & I-696	87	95	571	623
Jefferson & Martin	75	80	328	350
Moravian & Harrington	58	63	183	199
Van Dyke & 23 Mile	73	75	189	194
34 Mile & Van Dyke	105	111	1,107	1,170
Total	545	580	3,001	3,197
<i>Midland County</i>				
Lake Sanford & Curtis	54	60	82	91
M-20 & Homer	67	69	144	148
Redstone & Coleman	65	70	106	115
Pine River & Badour	81	90	190	212
Redstone & 11 Mile	68	78	173	198
Total	335	367	695	764
<i>Ottawa County</i>				
Lake Michigan & US 31	87	93	247	264
Polk & 104th	60	64	78	83
Total	147	157	325	347
Stratum 3				
<i>Berrien County</i>				
I-94 & M-139	129	134	476	495
Lakeside Rd & Union Pier	62	67	82	88
Pipestone & Naomi	115	133	207	240
Total	306	334	765	823
<i>Calhoun County</i>				
15 Mile & Michigan	142	149	186	195
B Drive & Beadle Lake	135	142	134	140
Michigan & Evanston	108	115	227	243
I-94 & 5 Mile	136	140	236	243
Total	521	546	783	821
<i>Clinton County</i>				
Clark & Upton	116	122	168	176
Hyde & Welling	61	64	37	38
M-21 & Lowell	90	95	161	170
Shepardsville & M-21	138	142	483	498
Westphalia & Main	72	76	174	184
Total	477	499	1,023	1,066

<i>Genesee County</i>				
Ballenger & Flushing	224	255	824	938
N Elms & Beacher	198	214	448	485
Grand Blanc & Duffield	92	97	109	115
I 475 & Court	168	186	351	388
M-57 & Vassar	104	117	152	171
Mt. Morris & I-75	142	150	272	287
Total	928	1,019	2,156	2,384
<i>Ionia County</i>				
Clarksville & Main	70	76	90	98
Zahm & State	206	222	247	266
Total	276	298	337	364
<i>Isabella County</i>				
Blanchard & Winn	96	111	93	107
Total	96	111	93	107
<i>Lapeer County</i>				
M-24 & Coutler	76	83	363	396
Otter Lake & Klam	55	65	193	229
Total	131	148	556	625
<i>Lenawee County</i>				
Clinton Macon & Mills Macon	47	65	106	147
M-50 & Pentecost Hwy	53	69	102	133
US-12 & Brooklyn	84	92	357	391
Total	184	226	565	671
<i>Marquette County</i>				
Washington & McClellan	172	183	350	373
M-95 & CR-LLK	178	183	326	335
Total	350	366	676	708
<i>Monroe County</i>				
Dixie & Dunbar	157	166	732	775
Ostrander & Bunce	64	70	77	84
Ostrander & Tuttle Hill	63	68	103	111
US-23 & US-233	80	84	192	202
US-23 & Plank	80	84	114	119
US-23 & Dixon	67	71	112	118
Total	511	543	1,330	1,409
<i>Montcalm County</i>				
Crystal & Sidney	79	91	97	112
Condensary & Crystal	64	66	101	104
M-91 & Sidney	122	133	230	251
Total	265	290	428	467

<i>Muskegon County</i>				
Moorland & Ravenna Heights	112	119	170	180
Ravenna & Blackmer	138	153	370	411
Ravenna Heights & Maple Island	140	148	206	218
Total	390	420	746	809
<i>Saginaw County</i>				
M-57/Fergus & Bishop	76	80	96	102
Total	76	80	96	102
<i>Shiawassee County</i>				
M-52 & Grand River	83	86	260	270
M-52 & I-69	86	89	384	397
Juddville & Chipman	69	74	55	59
Total	238	249	699	726
<i>St. Clair County</i>				
Riley Center & I-69	75	78	98	102
M-19 & Lambs	92	96	203	212
M-29 & Perch	102	107	558	585
Total	269	281	859	899
<i>St. Joseph County</i>				
Banker & Klingor	72	77	114	122
Milliard & US-131	155	162	521	545
Total	227	239	635	667
<i>Van Buren County</i>				
CR-681 & CR-384	59	61	44	45
CR-681 & CR-380	63	65	84	87
I-196 & Phoenix	108	112	591	614
M-51 & CR-352	72	76	153	161
Total	302	314	872	907
Stratum 4				
<i>Wayne County</i>				
7 Mile & Van Dyke	76	78	671	688
8 Mile & Randolph	82	82	366	365
Annapolis & Wayne	112	122	776	845
Ecorse & Monroe	129	133	252	260
Ecorse & Haggerty	100	106	371	393
Eureka & Middlebelt	98	106	530	573
Evergreen & McNichols	64	70	243	266
Farmington & Plymouth	66	70	577	611
Ford & Sheldon	138	144	1,037	1,082
Fort & Goddard	141	147	1,015	1,058
Geddes & Canton Center	102	108	361	382

Grand River & 8 Mile	92	104	1,329	1,504
Grand River & Schaefer	46	68	197	290
Greenfield & 9 Mile	98	130	770	1,023
Greenfield & 8 Miles	112	126	729	821
Huron River & Sibley	48	64	53	70
North Line & I-75	126	133	1,149	1,223
I-75 & Southfield	148	152	1,144	1,175
I-94 & Harper (Vernier)	52	62	697	830
Middlebelt & I-96	78	86	522	574
I-96 & Livernois	124	132	828	882
Inkster & Van Horn	62	68	128	141
Jefferson & Randolph	76	76	1,184	1,184
Michigan & Greenfield	122	126	1,129	1,166
Outer Drive & Rotunda Village	140	144	904	936
Palmer & Lilley	90	94	237	247
Plymouth & Greenfield	90	112	523	649
Rawsonville & Textile	62	68	355	390
Savage & Haggerty/Bemis	84	106	82	103
Sumpter & Oakville Waltz	74	96	76	98
Sumpter & Main	68	68	301	301
Telegraph & Eureka	136	142	1,185	1,236
Telegraph & Northline	119	125	557	585
Van Dyke & 6 Mile	68	72	575	609
Van Horn & Inkster	62	68	128	141
Vernier & Lake Shore Drive	78	78	498	498
Vernier & Mack	76	80	704	741
Waltz & Willow	56	60	91	97
Warren & Southfield	131	142	1,223	1,325
Wayne & Wick	57	57	418	418
Woodward & Warren	62	68	979	1,073
Total	3,745	4,073	24,894	26,853